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REMARKS

Claims 1-20 are in the case. The specification, drawings, and claim 18 are objected to. Claims 1-20 are rejected under 35 USC § 103 over USPN 5,736,735 to Hagiwara. Claims 1, 8, and 17-18 have been amended and claim 16 is hereby cancelled. No new matter has been introduced by the amendments, which are supported by the disclosure of the original claims, specification, and drawings. Reconsideration and allowance of the claims are respectfully requested.

DRAWING OBJECTIONS

The drawings are objected to. The objection is obviated by the cancellation of claim 16.

SPECIFICATION OBJECTIONS

The specification is objected to because of the title. The specification is hereby amended as given above to overcome the objection. Reconsideration is respectfully requested. However, applicant notes that the original title of the application was descriptive of the invention described in the application, which raises the possibility that the examiner might have been focused on aspects of the description that were ancillary to the invention.

CLAIM OBJECTIONS

Claim 18 is objected to. The claim is hereby amended as given above to overcome the objection. Reconsideration and allowance are respectfully requested.

CLAIM REJECTIONS UNDER §103

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hagiwara. Independent claim 1 claims, *inter alia*, an inspection system having a beam generator adapted to direct a primary beam at the substrate at a *variable scanning angle as defined by X and Y coordinates and not by an angle of incidence of the primary beam on the substrate*, thereby producing a secondary beam having properties that are

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characteristic of properties of the structures on the substrate, a stage adapted to scan the substrate relative to the primary beam at a *selectable speed*, where a direction of movement of the stage is defined as the X coordinate, and the Y coordinate is perpendicular to the X coordinate within a plane of the substrate, a sensor, an analog to digital converter, and a controller to *selectively order the digital signals* in an output *based on a relationship between the variable scanning angle and the selectable speed*, and a *resolution of the inspection system is variable* based on the variable scanning angle and the selectable speed.

Hagiwara does not describe such a system. One primary difference between Hagiwara and the present invention as claimed can be summarized by stating that “the angle” in Hagiwara is an angle of incidence *against* the plane of the substrate, and “the angle” in the present invention is a scan angle *within* the plane of the substrate. This is described in more detail below.

Hagiwara describes an inspection system where a beam L13, as depicted in figure 4, is scanned in a substantially straight scan line 25 in a direction that is perpendicular to the direction “a” of travel of the stage 20. According to Hagiwara, the beam L13 is scanned in the X coordinate, and the stage 20 moves in the Y coordinate. In the language used in the present application, the beam L13 is scanned in the Y coordinate, and the stage 20 moves in the X coordinate. Although the different coordinate systems are mere semantics, it is important to have a frame of reference between Hagiwara and the present invention as claimed.

What does not change, however, is that Hagiwara does not ever disclose that the angle between the scan line 25 can change in the XY coordinate space. There is an angle imparted to the beam L13 in the YZ coordinate space (the angle of incidence), but that is immaterial as far as the present invention is concerned, which describes a variable angle in the XY coordinate space, not the YZ coordinate space. It should be noted that the YZ coordinate space and the XZ coordinate space are components of the angle of incidence, which is the language used in the claims. Hagiwara describes this as follows:

“In FIGS. 3 and 4, the stage 20 is moved by an actuator 26, which is driven in synchronism with the motor 1 in the optical scanning device 6, in a direction indicated by an arrow a, *perpendicular to the scanning*

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direction of the light beam L13, every time the light beam L13 has completed scanning of the surface 21A to be inspected of the substrate 21 to be inspected. With this movement, the light beam L13 can scan the entire surface 21A to be inspected of the substrate 21 to be inspected” (emphasis added).

Hagiwara does not at any point describe a variable adjustment of the scanning angle of the light beam L13 in the XY coordinate space. However, in the present invention that scanning angle is variable, as depicted by beams 44 in figure 2. Hagiwara is only capable of making the scan as depicted by beam 40 in figure 2. Further, Hagiwara do not at any point describe ordering the digital signals in an output based on a relationship between the variable scanning angle and the selectable speed, whereas the present invention as claimed does. In addition, Hagiwara does not describe that the resolution of the inspection system is adjusted based on the variable scanning angle and the selectable speed. Thus, there are at least three key differences between the present invention as claimed and Hagiwara.

Thus, claim 1 patentably defines over Hagiwara. Reconsideration and allowance of claim 1 are respectfully requested. Dependent claims 2-7 depend from independent claim 1, and contain additional important aspects of the invention. Therefore, dependent claims 2-7 patentably define over Hagiwara. Reconsideration and allowance of dependent claims 2-7 are respectfully requested.

Similar to that as described above in regard to claim 1, claim 8 claims, inter alia, an inspection system having a beam generator adapted to direct a primary beam at the substrate at an adjustable angle as defined by X and Y coordinates and not by an angle of incidence of the primary beam on the substrate, thereby producing a secondary beam, means for adjusting a selectable angle at which the primary beam scans on the substrate, a substrate stage, where a direction of relative movement between the stage and the primary beam is defined as the X coordinate, and the Y coordinate is perpendicular to the X coordinate within a plane of the substrate, means for scanning the substrate and the primary beam at a selectable speed, an input, a sensor, an analog to digital converter, and a controller adapted to adjust the selectable angle, adjust the selectable speed, receive the digital signals, and selectively order the digital signals in an output based on a

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relationship between the variable scanning angle and the selectable speed, where a resolution of the inspection system is variable based on the variable scanning angle and the selectable speed.

As described at length above, Hagiwara does not describe this combination of elements. Thus, claim 8 patentably defines over Hagiwara. Reconsideration and allowance of claim 8 are respectfully requested. Dependent claims 9-16 depend from independent claim 8, and contain additional important aspects of the invention. Therefore, dependent claims 9-16 patentably define over Hagiwara. Reconsideration and allowance of dependent claims 9-16 are respectfully requested.

Similar to that as described above in regard to claim 1, claim 8 claims, *inter alia*, a method to inspect structures on a substrate by directing a primary beam at the substrate at a selectable angle as defined by X and Y coordinates and not by an angle of incidence of the primary beam on the substrate, thereby producing a secondary beam, scanning the substrate and the primary beam at a selectable speed and in a direction, where the selectable angle is not ninety degrees relative to the direction, where the direction is defined as the X coordinate, and the Y coordinate is perpendicular to the X coordinate within a plane of the substrate, and determining the properties of the structures on the substrate based at least in part on the properties of the digital signals, and selectively ordering the digital signals in an output based on a relationship between the variable scanning angle and the selectable speed, where a resolution of the inspection method is variable based on the variable scanning angle and the selectable speed.

As described at length above, Hagiwara does not describe this combination of elements. Thus, claim 17 patentably defines over Hagiwara. Reconsideration and allowance of claim 17 are respectfully requested. Dependent claims 18-20 depend from independent claim 17, and contain additional important aspects of the invention. Therefore, dependent claims 18-20 patentably define over Hagiwara. Reconsideration and allowance of dependent claims 18-20 are respectfully requested.

CONCLUSION

Applicants assert that the claims of the present application patentably define over the prior art made of record and not relied upon for the same reasons as given above.


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Applicants respectfully submit that a full and complete response to the office action is provided herein, and that the application is now fully in condition for allowance. Action in accordance therewith is respectfully requested.

In the event this response is not timely filed, applicants hereby petition for the appropriate extension of time and request that the fee for the extension be charged to deposit account 12-2355. If other fees are required by this amendment, such as fees for additional claims, such fees may be charged to deposit account 12-2252. Should the examiner require further clarification of the invention, it is requested that s/he contact the undersigned before issuing the next office action.

Sincerely,

LUEDEKA, NEELY & GRAHAM, P.C.

By: 

Rick Barnes, 39,596

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